

## CLAIMS

What is claimed is:

1. A reinforced polymeric pad comprising:  
a shock absorbing envelope comprising a polymer gel substantially surrounding a substrate.
2. The reinforced polymeric pad of claim 1, wherein the pad comprises a top layer and a bottom layer.
3. The reinforced polymeric pad of claim 2, wherein the layers are formed from a resilient polymeric material.
4. The reinforced polymeric pad of claim 2, wherein the layers are formed from a woven material.
5. The reinforced polymeric pad of claim 1, wherein the substrate has a density less than the polymeric gel.
6. The reinforced polymeric pad of claim 1, wherein the substrate is formed from a foamed polymeric material.
7. The reinforced polymeric pad of claim 6, wherein the substrate is formed from a foamed PVC.

8. The reinforced polymeric pad of claim 1, wherein the polymeric material comprises at least greater than 50% by weight of an epoxidized vegetable oil, a thermoplastic polymer; and a prepolymer.

9. The reinforced polymeric pad of claim 8, further including an activator.

10. The reinforced polymeric pad of claim 9, wherein the activator is an alkyl tin compound.

11. The reinforced polymeric pad of claim 8, wherein the epoxidized vegetable oil is selected from the group consisting of soybean oil, linseed oil, and combinations thereof.

12. The reinforced polymeric pad of claim 8, wherein the prepolymer comprises an isocyanate selected from the group of aliphatic, cycloaliphatic, araliphatic, aromatic, heterocyclic polyisocyanates and combinations thereof.

13. The reinforced polymeric pad of claim 8, wherein in the thermoplastic polymer is substantially free of a polyurethane.

14. The reinforced polymeric pad of claim 8, wherein the thermoplastic polymer comprises a polydiene.

15. The reinforced polymeric pad of claim 8, wherein the thermoplastic polymer is a polybutadiene.

16. A reinforced polymeric pad comprising:  
a shock absorbing envelope comprising a top and bottom layer forming the envelope containing a polymeric gel and a substrate having a density less than the density of the polymeric gel.

17. The reinforced polymeric pad of claim 16, wherein the substrate is formed from a foamed polymeric material.

18. The reinforced polymeric pad of claim 16, wherein the top and bottom layers are formed from a resilient non-woven material.

19. The reinforced polymeric pad of claim 16 comprising an epoxidized vegetable oil, a thermoplastic polymer substantially free of a polyurethane and a prepolymer.

20. The reinforced polymeric pad of claim 16, further including an activator.

21. The reinforced polymeric pad of claim 20, wherein the activator is an alkyl tin compound.

22. The reinforced polymeric pad of claim 16, wherein the prepolymer comprises an isocyanate selected from the group of aliphatic, cycloaliphatic, araliphatic, aromatic, heterocyclic polyisocyanates and combinations thereof.

23. The reinforced polymeric pad of claim 16, wherein the polymeric gel comprises on a percent weight basis of the gel at least greater than about 50% of a vegetable based plasticizer, between about 20% and about 40% of a thermoplastic polymer, and between about 5% and about 20% of a prepolymer.

24. A method of forming a reinforced polymeric pad comprising:  
forming a shock absorbing envelope by sealing within a top and bottom layer a polymeric gel and a substrate having a density less than the density of the polymeric gel.

25. The method of forming a reinforced polymeric of claim 24 wherein the polymeric gel is formed by combining an epoxidized vegetable oil, a polydiene and a cyano group.

26. The method of forming a reinforced polymeric pad of claim 24, wherein the polydiene is selected from polybutadiene, polyisoprene, polychloroprene, polynobornene, copolymers, terpolymers and combinations thereof.

27. The method of forming a reinforced polymeric pad of claim 24, wherein the top and bottom layer are sealed by fusing the two layers along the periphery of the pad.

28. The reinforced polymeric pad of claim 24, wherein the gel comprises about 20% to about 40% of the polydiene.

29. The reinforced polymeric pad of claim 24, wherein the cyano group is an isocyanate group.

30. The reinforced polymeric pad of claim 24, further comprising an alkyl tin compound.

31. The reinforced polymeric pad of claim 30, wherein the gel comprises up to about 5% by weight of the alkyl tin compound.